

Montgomery County, Maryland Welfare To Work Transportation Application Job Access Project

Program Category #14: Information Technology

1.0 Abstract

The Montgomery County, Maryland Department of Information Systems and Telecommunications - Geographic Information Systems (DIST-GIS) team, in cooperation with the Department of Health and Human Services (HHS), developed an ArcView GIS based Job Access application to provide the HHS welfare recipients with useful commuting routes combined with licensed child care location information and to improve HHS customer service efficiency. This project is called the **Job Access Project**. The primary customers for the Job Access application are current or former welfare recipients attempting to locate licensed child care on the route between work and home. The child care location data for this application includes information for over 1260 licensed child care facilities in Montgomery County including group daycare and the family home daycare. The routing function of the Network Analyst extension of ArcView GIS generates the customer's driving route between the work location and the home. The application also provides links to public transportation website for obtaining bus schedule, fare and route maps. The child care provider data presented in the **Job Access Project** application reflects information downloaded weekly by a DIST-GIS staff member.

2.0 Need for the Program

This Montgomery County **Job Access Project** application was developed to improve HHS customer service efficiency and to provide useful commuting and child care information to the current or former welfare recipients. This application extends the features of LOCATE. LOCATE is a statewide computerized child care resource and referral counseling system that uses professional counselors to assist parents in accessing quality child care. Prior to the development of the Job Access application, there was no computer-assisted way to pinpoint the location of child care within the customer's commute path. Consequently, HHS asked DIST-GIS to create the application to reduce the complexity of creating these maps and to provide a sophisticated, yet simple application, to allow HHS customer service staff to quickly search and locate a child care facility in Montgomery County based on the travel route. As a result, DIST-GIS developed the Job Access application to enable staff to quickly find a Montgomery County child care facility based on a customer's home or work address. The application was also created to provide additional information about the child care facility and to include web links related to public transportation in Montgomery County. Many of the Job Access Project customers rely on public transportation.

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3.0 Description of the Program

The Job Access application was designed and tested on the ESRI GIS software ArcView, the ArcView extension Network Analyst, and Microsoft Internet Explorer. After a few review meetings and revisions, the application was approved by HHS and is waiting for roll out to HHS staff and their employment contractor, MAXIMUS. The following sub-section describes the process used to develop and maintain the Job Access application.

Job Access Application Development and Maintenance

Step 1: Establish functional requirements

HHS provided DIST-GIS with functional requirements for the Job Access application in February of 2000. The Child Care Locator function was to provide quick access to listings and information for over 1260 child care facilities in Montgomery County including center daycare and family home daycare. In addition, staff were to be able to search for a child care facility based on a home or work address. Child Care database attributes provided were the type of care, the license number and the address of the facility. The map layers needed for the project included street centerlines, Ride On routes, Metro Bus routes and stops, Metro stations, schools and child care facilities.

The application is to be installed on eight designated PC's among the HHS service centers. These PC's are Internet-enabled so that they can access the Department of Public Works and Transportation (DPWT) web site for Ride On Bus Routes and related transportation issues, contacts, and information. Five of the PC's will be assigned to HHS customer service staff. The remaining three will be assigned to MAXIMUS, HHS' employment services contractor. The Child Care data is to be updated weekly by a DIST-GIS staff member.

Step 2: Collect data, documents, and information

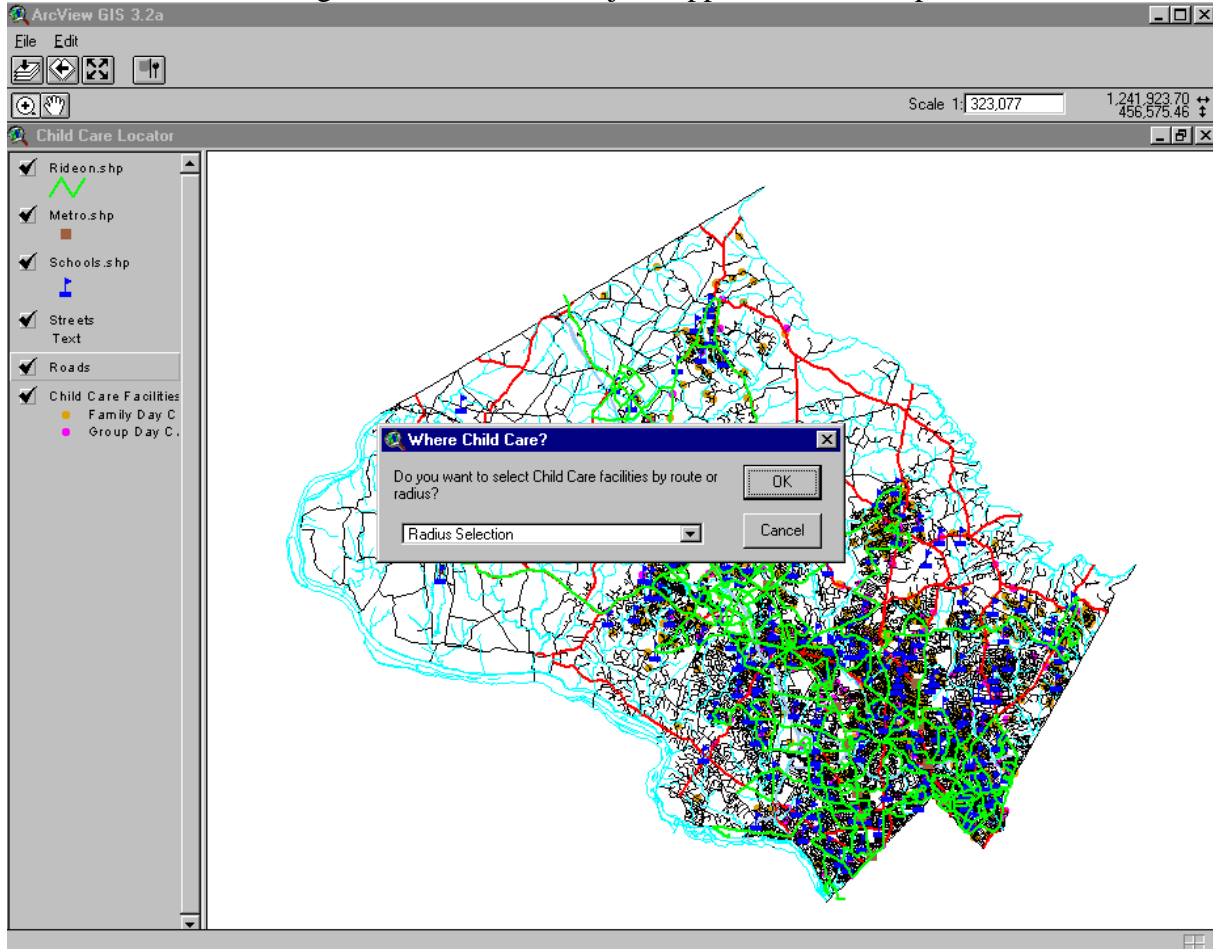
HHS arranged to license the child care facilities data from the Maryland Committee for Children (MCC), a not-for-profit group based in Baltimore (www.mdchildcare.org). MCC then enabled DIST-GIS to download the Montgomery County portion of the database. The data items available to the County included addresses for child care facilities, and for each facility, type of child care (center daycare and family home daycare) and the license number. These addresses from the databases are geocoded weekly and then go through quality control checks. The geocoded child care facilities data are then imported to the Job Access application. Ride On Bus routes, Metro Bus routes and Metro stations are provided by DPWT, school locations provided by Montgomery County Public Schools (MCPS), and the street centerlines provided by DIST-GIS. These are useful geographic references, for the displaying of child care locations. Detailed instructions for using the Job Access application, and pictures were provided in hard copy format for easy reference. Tutorial classes will also be provided to HHS staff by a DIST-GIS staff member.

Step 3: Programming and Creating the Job Access Application

The application was programmed with Avenue scripting using ESRI's ArcView software development environment. The routing capability was provided by ESRI's Network Analyst, an ArcView extension. Microsoft's Internet Explorer was used to display the final map and query to be printed. The application was initially tested on a Dell OptiPlex GX300, Pentium 3 with Microsoft Windows NT 4.0.

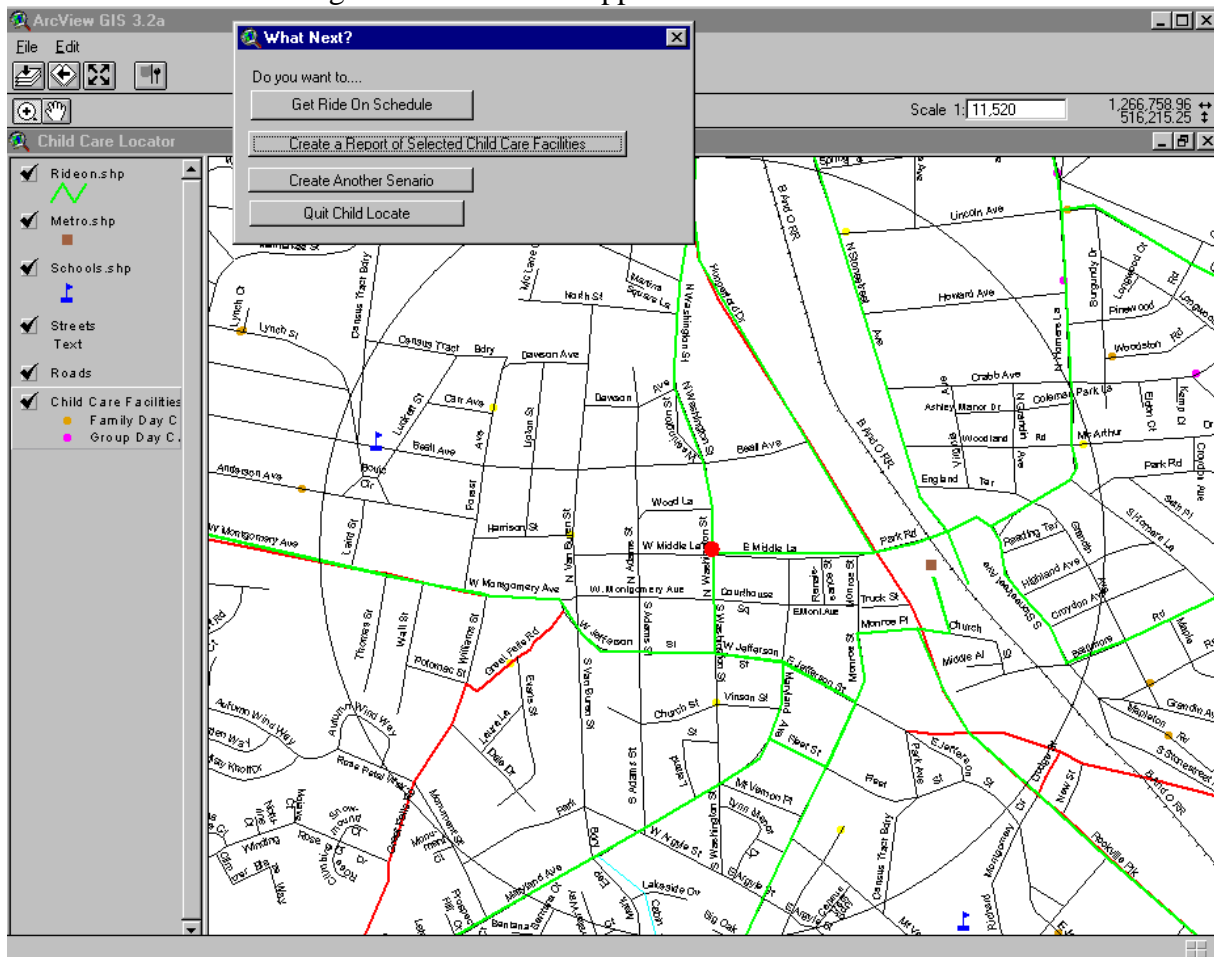
The application interface is generated by functional dialog boxes and simple input boxes to enable HHS customer service staff to quickly and easily review the results of their query (Figure 1).

Figure 1: Job Access Project Application Start Up



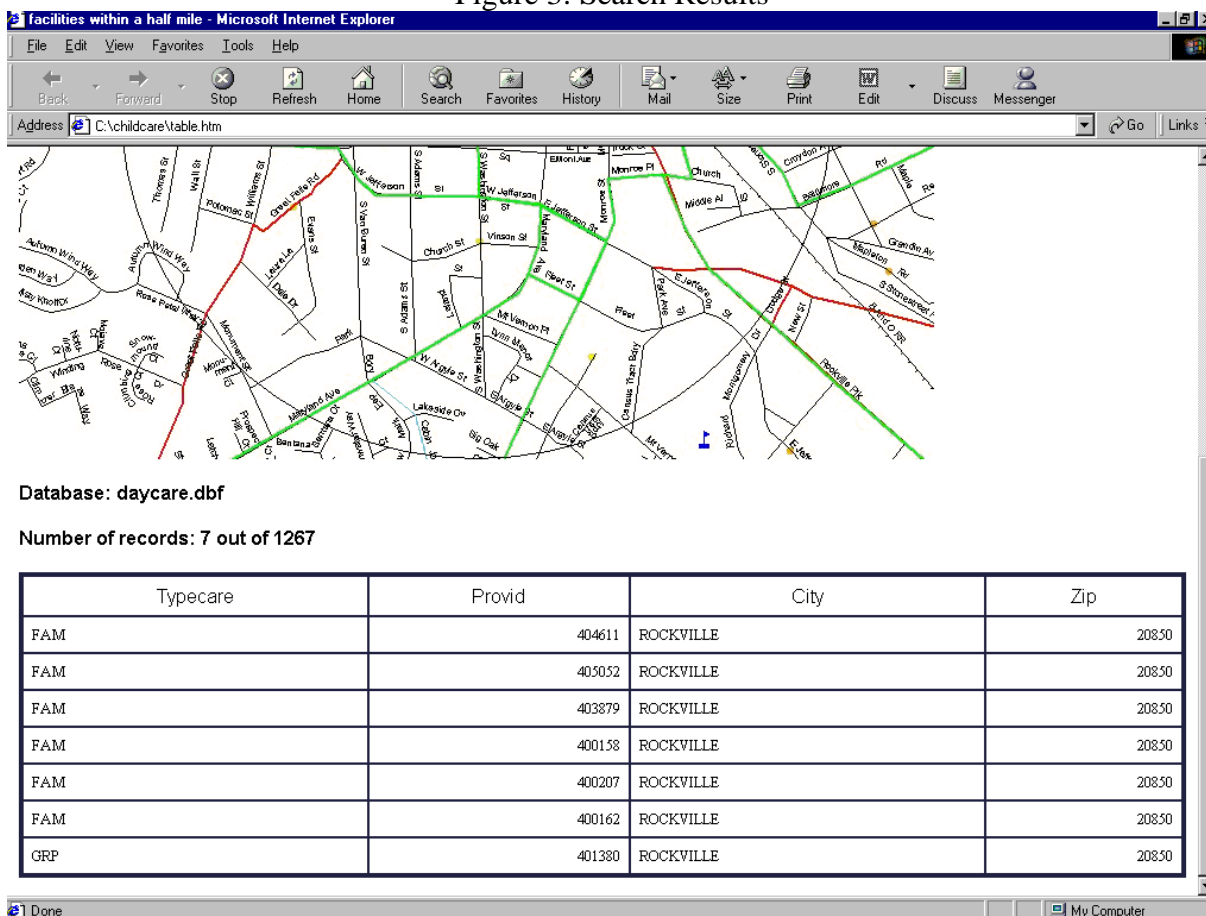
The Job Access application was designed to enable users to find a day care provider between the home and work place and get turn by turn directions. The application includes search options to find day care within a user specified radius of an address. In addition, customer service staff also has the option to conduct a more comprehensive search based on the route to, from and in between, home, work and childcare within a user specified radius of those points (Figure 2).

Figure 2: Job Access Application Radius Search



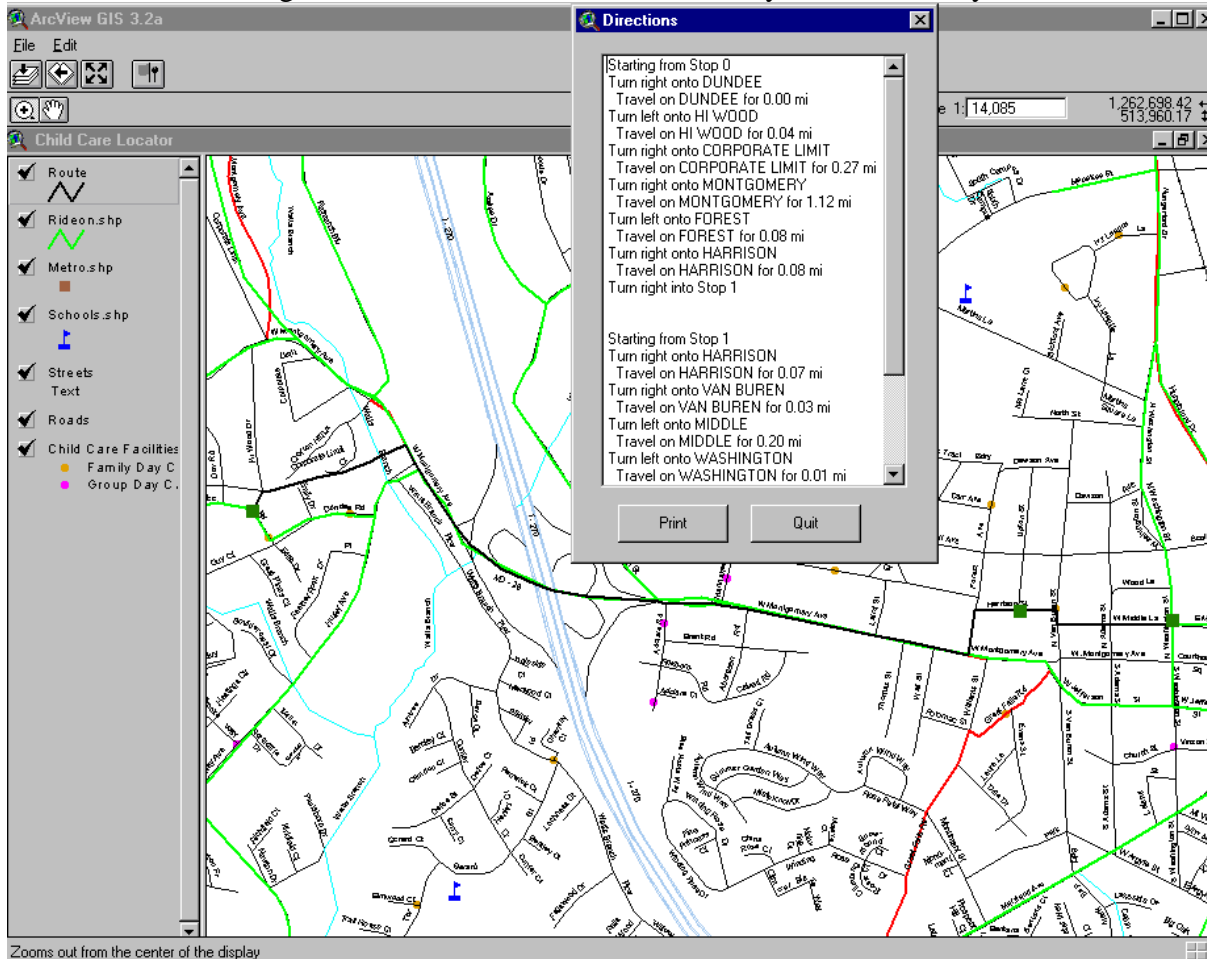
The search results, depicting child care facilities within a user specified radius, are then depicted in an HTML page (Figure 3).

Figure 3: Search Results



The HHS customer service staff can then print the child care facility type, provider number, city and zip and include a map of the area, that displays the route taken to, from and in between home, childcare, and work. Additional data layers--public transportation routes, public schools and child care facilities--are also available for display. They can also choose to go to the DPWT web site for Ride On route scheduling, from within the Job Access application or from the HTML page shown above.

Figure 4: Travel Directions Generated by Network Analyst



With the use of the Network Analyst software and in conjunction with the DIST street centerlines, the Job Access application can generate (shortest distance) routes between home, child care, and work place, along with turn by turn directions.

Step 4: Review and revise Job Access Application

HHS reviewed and provided recommendations for the application over March of 2000 thru March of 2002. The recommendations were incorporated into the application by the DIST-GIS staff member and were approved by HHS in January of 2002.

Step 5: Install Job Access Application on the 8 Remote Location PC's

HHS had previously procured sufficient copies of ArcView 3.2. DIST-GIS had recently acquired copies of Network Analyst for HHS. The Job Access application, along with the ArcView and Network Analyst software were then installed on the eight PC's.

Step 6: Maintain Application Content

Licensed child care facility data is maintained by Maryland Committee for Children in Fox Pro spreadsheets and is downloaded by the DIST-GIS staff member on a weekly basis. The data is then reviewed and prepared for input into the Job Access application by the DIST-GIS staff

member. The application content including GIS shape files, facility data and street centerlines will be updated annually by DIST-GIS staff. The system administration of the application is also provided by DIST-GIS.

4.0 Use of Technology

The Job Access application was initially created and tested on a DIST-GIS Pentium 3 PC with Microsoft Windows NT 4.0, Microsoft Internet Explorer 4.0, and 1 GB of RAM. GIS software used included ESRI's ArcView 3.2, and Network Analyst.

ESRI's ArcView programming language, Avenue, was used as the application development environment to design, program, and test scripts used to create the Job Access application. Microsoft Internet Explorer technology was used to connect to the DPWT website and create an HTML page for the search result report. Finally, ESRI's Network Analyst was used to generate the routes for given addresses and produce turn by turn directions.

5.0 The Cost of the Program

The total cost to develop the HHS Job Access application including staff time (programming and data maintenance) and software/hardware equipment is approximately \$25,000. Approximately 80 hours of staff time were invested into the development of the application at a cost of \$2,250. The GIS software cost approximately \$10,000. Licensing the child care facility data from MCC cost \$4,999 for the first year. Maintenance cost will vary according to advances in technology. Annual County data updates and maintenance costs, not factored into the total cost of the application development, were estimated to be \$2,500.

In order for an HHS customer service staff member to use the application, a Pentium 400 MHz or better Intel-based personal computer running Windows 95, Windows 98, Windows 2000, or Windows NT 4 with ESRI's ArcView GIS, and Network Analyst software is required. A standard county T1 connection to the Internet through Microsoft Internet Explorer should satisfy the needs of staff.

6.0 The Results/Success of the Program

This application was to be funded from a grant called Job Access, given to the HHS Department. Thus, the need for auditing the application was evident. The performance of the HHS Job Access Application will be evaluated by using a Microsoft Access database spreadsheet to gauge the number of times the application is accessed and by reviewing customer feedback forms and e-mails.

The positive results of this application consist of a simple and uncomplicated way for HHS customer service staff to query, map and report the licensed child care facilities in Montgomery County and help the customers in locating the child care services and designing travel routes based on either private vehicle or public transportation. The application will help reduce the demand on staff time in responding to customer service-related questions from the Job Access customers.

7.0 Worthiness of an Award

Finding a suitable licensed child care provider is a critical step for Welfare to Work customers. The combined barriers of child care and transportation directly impact the customer's ability to maintain a job once employed. This application helps customers find child care which helps them find employment. Then the application helps customers manage the task of getting from home to child care and then to work. By making this part of the workday more manageable, the customer is more likely to retain the job. This application will not only benefit welfare to work customers but any Montgomery County resident that use child care and public transportation.

The HHS Job Access Project application provides HHS customer service staff with tools to search, display, map or report licensed child care information in seconds rather than hours. Consequently, it is anticipated that the implementation of this application will replace the need to manually look up the location of a child care facility, one by one, thereby, resulting in a significant savings in staff time and retrieving a larger number of significant facilities within the area of interest. The delivery of free licensed child care information empowers a customer to find a facility that fits their needs. As a result, customer service investments may be minimized.

Although, there are other private agencies that maintain this kind of child care database, Montgomery County is one of the first few local governments to develop this kind of service for its citizens. The HHS Job Access Project application serves as a model for other counties and municipalities who provide locations of licensed child care facilities and information to their communities and constituents. More importantly, this application will assist the efforts of many former welfare recipients as they move toward self-sufficiency.